

AMENDMENTS
In the Claims

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Page 2

Response to 27 June 2007 Non-Final Office Action
Att. Docket: 98006/26US
2010-06-27 10:21:34.000, 2012-06-27 10:21:49.000

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44.(canceled)

1 45.(canceled) A method for noninvasive analysis of blood comprising the steps of:
2 irradiating blood in a big vein associated with an underside of a patient's tongue with
3 radiation having at least one frequency or wavelength;
4 detecting a response from the blood irradiated in the irradiating step;
5 calculating a concentration of a blood component, a value of a blood parameter or a mixture
6 or combination thereof from the response.

1 46.(canceled) The method of claim 45, further comprising the step of:
2 displaying the response, the concentration and/or the value from the calculating step.

1 47.(canceled) The method of claim 45, wherein the detecting step comprises the step of:
2 utilizing one or a combination of techniques selected from the group consisting of reflectance
3 technique, confocal technique, scanning confocal technique, polarization techniques, interferometry,
4 optoacoustics, low coherence interferometry and reflectometry, techniques based on speckle
5 measurements, fluorescence technique, Raman scattering technique, and two or multi-photon
6 techniques.

1 48.(canceled) The method of claim 45, wherein the wavelength of the radiation is from about 200
2 nanometers to about 20 microns.

1 49.(canceled) The method of claim 45, wherein the radiation has comprises a single wavelength or
2 frequency or a plurality of wavelengths or frequencies.

1 50.(canceled) The method of claim 45, wherein the response corresponds to a concentration of
2 hemoglobin in the blood and the wavelength of the radiation is selected from the group consisting
3 of 548 nm, 568 nm, 587 nm, and 805 nm, from about 400 nm to about 640 nm and from about 1120
4 nm to about 1130 nm.

1 51.(canceled) The method of claim 45, wherein the blood component is selected from the group

2 consisting of hematocrit, hemoglobin, glycosylated hemoglobin, hemoglobin and glycosylated
3 hemoglobin, glucose, cholesterol, oxy-hemoglobin, deoxy-hemoglobin, and carboxy-hemoglobin.

1 52.(canceled) The method of claim 45, wherein the blood component is an exogenous substance
2 selected from the group consisting of a drug, a dye or other reporter in a molecular state or a particle
3 made of a liquid, a gas, or a solid, a combination of a liquid, a gas, or a solid, and a layered structure.

1 53.(canceled) The method of claim 5152, wherein the exogenous substance is selected from the
2 group consisting of indocyanine green and Evans blue.

1 54.(canceled) The method of claim 52, wherein the exogenous substance are particles having a size
2 from about 0.1 nanometer to about 10 microns.

1 55.(canceled) The method of claim 45, wherein the radiation is selected from the group consisting
2 of microwave radiation, radiofrequency radiation, ultrasound radiation, and low-frequency
3 electromagnetic radiation.

1 56.(canceled) The method of claim 45, further comprising:
2 performing the detecting step in the presence of a static electric or magnetic field.

1 57.(canceled) An apparatus for noninvasive blood analysis comprising:
2 a probe including a tip having a radiation outlet and a response inlet, where the probe tip is
3 adapted to be placed in proximity to or in contact with a surface of a tissue over a big vein associated
4 with an underside of a patient's tongue;
5 a light generation/delivery system including a light source capable of generating at least one
6 frequency of light, and a light conduit interconnecting the light source with the radiation outlet,
7 where the system is adapted to deliver radiation to blood in the big vein; and
8 a detector/analyzer system including a detector adapted to detect a response from the
9 irradiated blood via the response inlet and an analyzer adapted to convert the detected response into
10 a concentration of a blood component and/or a value of a parameter of the blood.

1 **58.(canceled)** The apparatus of claim 57, further comprising:

2 a display adapted to display the response, the concentration, and/or the value.

1 **59.(canceled)** The apparatus of claim 57, wherein the wavelength of the radiation is from about 200
2 nanometers to about 20 microns.

1 **60.(canceled)** The apparatus of claim 57, wherein the radiation has comprises a single wavelength
2 or frequency or a plurality of wavelengths or frequencies.

1 **61.(canceled)** The apparatus of claim 57, wherein the detector is capable of detecting data derived
2 from one or a combination of techniques selected from the group consisting of reflectance technique,
3 confocal technique, scanning confocal technique, polarization techniques, interferometry,
4 optoacoustics, low coherence interferometry and reflectometry, techniques based on speckle
5 measurements, fluorescence technique, Raman scattering technique, and two or multi-photon
6 techniques.

1 **62.(canceled)** The apparatus of claim 57, wherein the response corresponds to hemoglobin and the
2 wavelength is selected from the group consisting of 548 nm, 568 nm, 587 nm, 805 nm, from about
3 400 nm to about 640 nm and from about 1120 nm to about 1130 nm.

1 **63.(canceled)** The apparatus of claim 57, wherein the blood component is selected from the group
2 consisting of hematocrit, hemoglobin, glycosylated hemoglobin, hemoglobin and glycosylated
3 hemoglobin, glucose, cholesterol, oxy-hemoglobin, deoxy-hemoglobin, and carboxy-hemoglobin.

1 **64.(canceled)** The apparatus of claim 57, wherein the blood component is an exogenous substance
2 is selected from the group consisting of a drug, a dye or other reporter in molecular state or a particle
3 made of liquid, gas, or solid material including polymer, metal, semiconductor, dielectric, or a
4 combination of liquid, gas, or solid materials, and a layered structure.

1 **65.(canceled)** The apparatus of claim 6264, wherein the exogenous substance is selected from the
2 group consisting of indocyanine green and Evans blue.

1 **66.(canceled)** The apparatus of claim 63, wherein the exogenous substance are particles having a
2 size from about 0.1 nanometer to about 10 microns.

1 **67.(canceled)** The apparatus of claim 57, wherein the radiation is selected from the group consisting
2 of microwave radiation, radiofrequency radiation, ultrasound radiation, and low-frequency
3 electromagnetic radiation.

1 **68.(canceled)** The apparatus of claim 57, further comprising:
2 a device for generating a static electric or magnetic field.

1 **69.(previously presented)** An apparatus for noninvasive blood analysis comprising:
2 right side and left side sections adapted to engage one or more teeth on each of a right side
3 and left side of a patient's jaw,
4 two transition sections extending downwardly from each of the side sections,
5 a middle section interposed between the two transition sections adapted to be proximate to
6 or in contact with an underside of a patient's tongue, where the middle section includes;
7 a emitter, and
8 a receiver,
9 where the emitter and the receiver are adapted to be proximate or in contact with a
10 surface of a tissue over a big vein associated with an underside of the patient's
11 tongue;
12 a light generation/delivery system including a light source capable of generating at least one
13 frequency of light, and a light conduit interconnecting the light source with a radiation outlet, where
14 the system is adapted to deliver radiation to blood in the big vein; and
15 a detector/analyzer system including a detector adapted to detect a response from the
16 irradiated blood via a response inlet and an analyzer adapted to convert the detected response into
17 a concentration of a blood component and/or a value of a parameter of the blood.

1 **70.(currently amended)** The apparatus of claim 5969, further comprising:
2 a plurality of emitters and receivers, located in pairs on a right hand side and a left side of the

3 middle section.

1 71.(currently amended) The apparatus of claim 6869, further comprising:
2 a display adapted to display the response, the concentration, and/or the value.

1 72.(currently amended) The apparatus of claim 6869, wherein the wavelength of the radiation
2 is from about 200 nanometers to about 20 microns.

1 73.(currently amended) The apparatus of claim 6869, wherein the radiation has comprises a
2 single wavelength or frequency or a plurality of wavelengths or frequencies.

1 74.(currently amended) The apparatus of claim 6869, wherein the detector is capable of
2 detecting data derived from one or a combination of techniques selected from the group consisting
3 of reflectance technique, confocal technique, scanning confocal technique, polarization techniques,
4 interferometry, optoacoustics, low coherence interferometry and reflectometry, techniques based on
5 speckle measurements, fluorescence technique, Raman scattering technique, and two or multi-photon
6 techniques.

1 75.(currently amended) The apparatus of claim 6869, wherein the response corresponds to
2 hemoglobin and the wavelength is selected from the group consisting of 548 nm, 568 nm, 587 nm,
3 805 nm, from about 400 nm to about 640 nm and from about 1120 nm to about 1130 nm.

1 76.(currently amended) The apparatus of claim 6869, wherein the blood component is selected
2 from the group consisting of hematocrit, hemoglobin, glycosylated hemoglobin, hemoglobin and
3 glycosylated hemoglobin, glucose, cholesterol, oxy-hemoglobin, deoxy-hemoglobin, and carboxy-
4 hemoglobin.

1 77.(currently amended) The apparatus of claim 69, wherein the blood component is an
2 exogenous substance is selected from the group consisting of a drug, a dye or other reporter in
3 molecular state or a particle made of liquid, gas, or solid material including polymer, metal,
4 semiconductor, dielectric, or a combination of liquid, gas, or solid materials, and a layered structure.

1 **78.(currently amended)** The apparatus of claim 7477, wherein the exogenous substance is
2 selected from the group consisting of indocyanine green and Evans blue.

1 **79.(currently amended)** The apparatus of claim 7577, wherein the exogenous substance are
2 particles having a size from about 0.1 nanometer to about 10 microns.

1 **80.(currently amended)** The apparatus of claim 6869, wherein the radiation is selected from
2 the group consisting of microwave radiation, radiofrequency radiation, ultrasound radiation, and low-
3 frequency electromagnetic radiation.

1 **81.(currently amended)** The apparatus of claim 6869, further comprising:
2 a device for generating a static electric or magnetic field.